

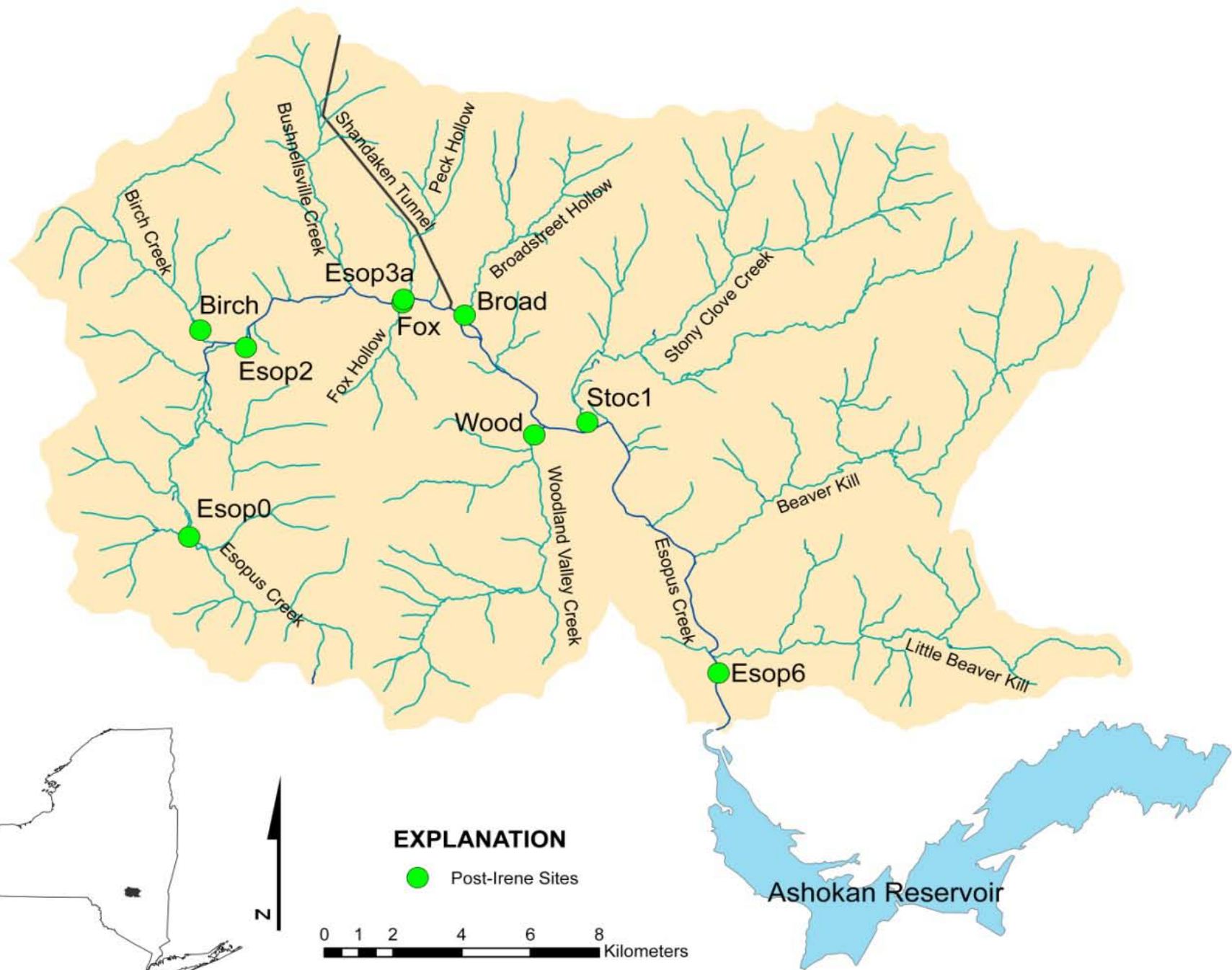
Effect of flooding from Tropical Storm Irene on fish assemblages in the Upper Esopus Creek, Catskill Park



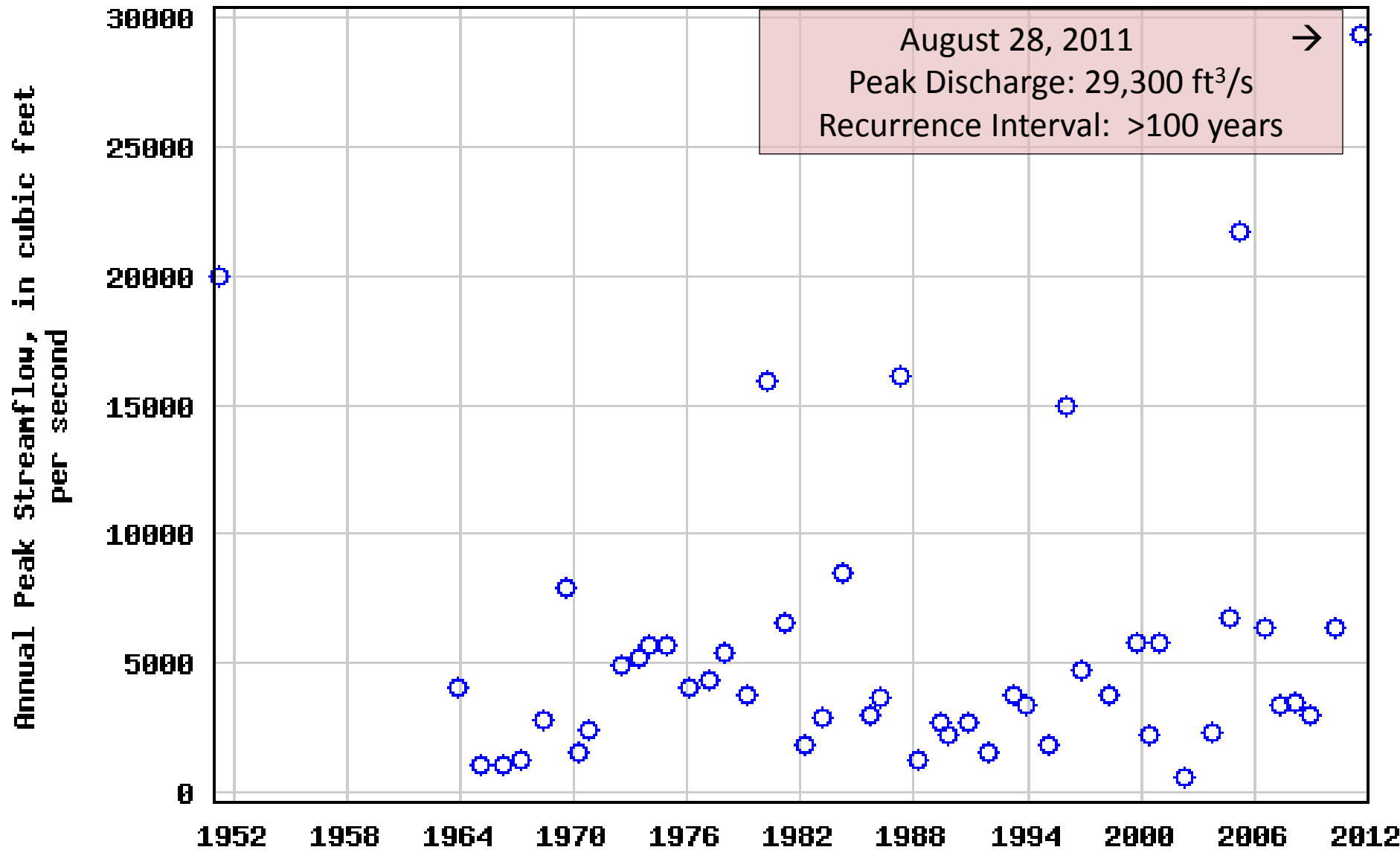
Video Source: Mjanensch1. "Esopus river at Woodland Valley bridge in Phoenicia, NY 8/28/11 8am." *YouTube*. Web. 30 Aug. 2011.

Scott George, Barry Baldigo, and George Robinson





USGS 01362200 ESOPUS CREEK AT ALLABEN NY



Jowett and Richardson, 1989

Brown trout in New Zealand pre-flood and post-flood (1986)

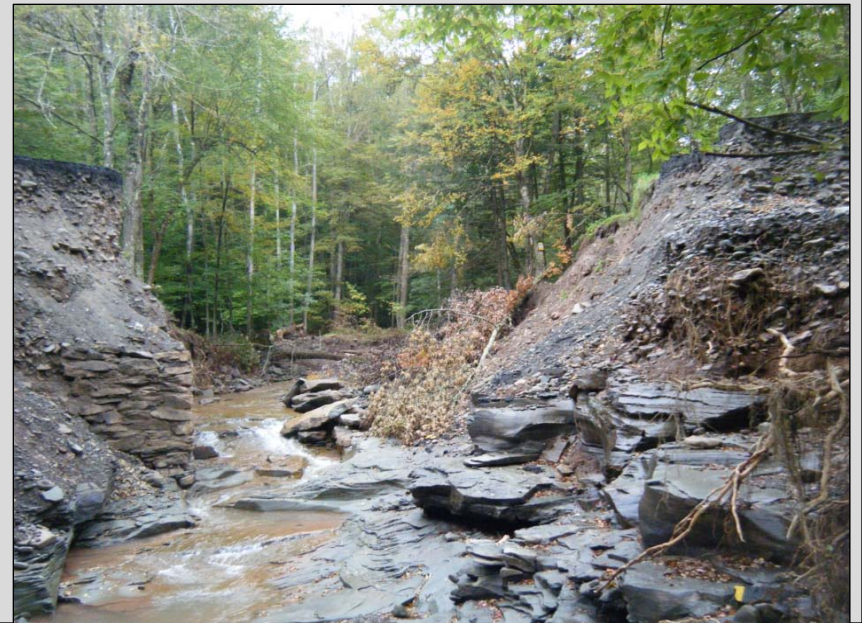
- 10-20 cm BT reduced 90-100%
- 20-40 cm BT reduced 62-87%
- >40 cm BT reduced 26-57%



Carline and McCullough, 2003

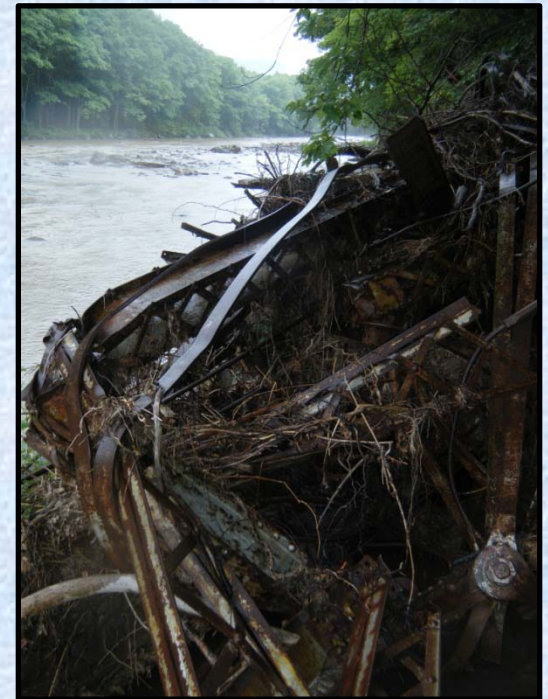
Brook trout in West Virginia pre-flood (1995) and post-flood (1996)

- Age 0+ brook trout reduced 98%
- Age 1+ brook trout reduced 84%

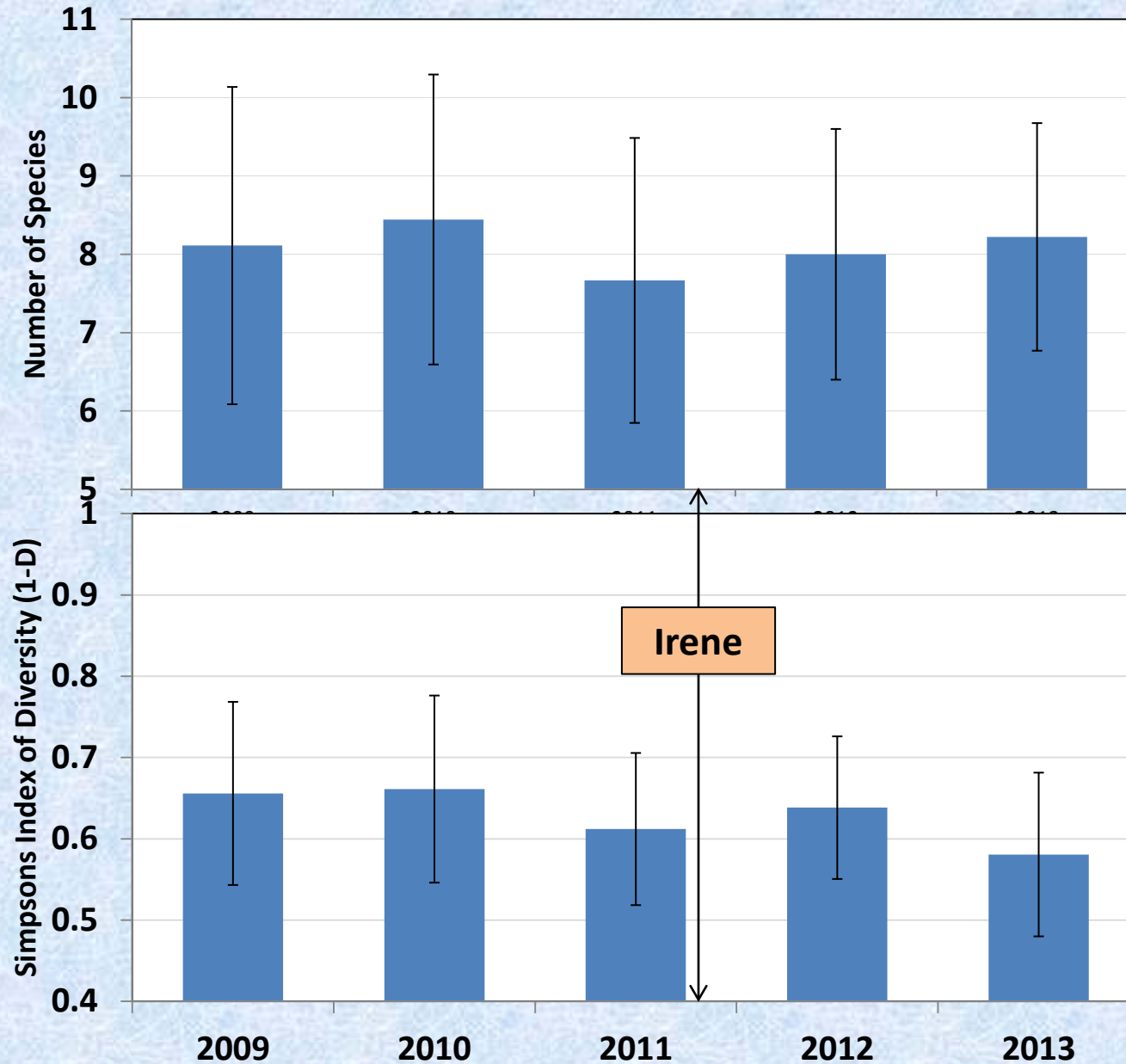


Hypotheses

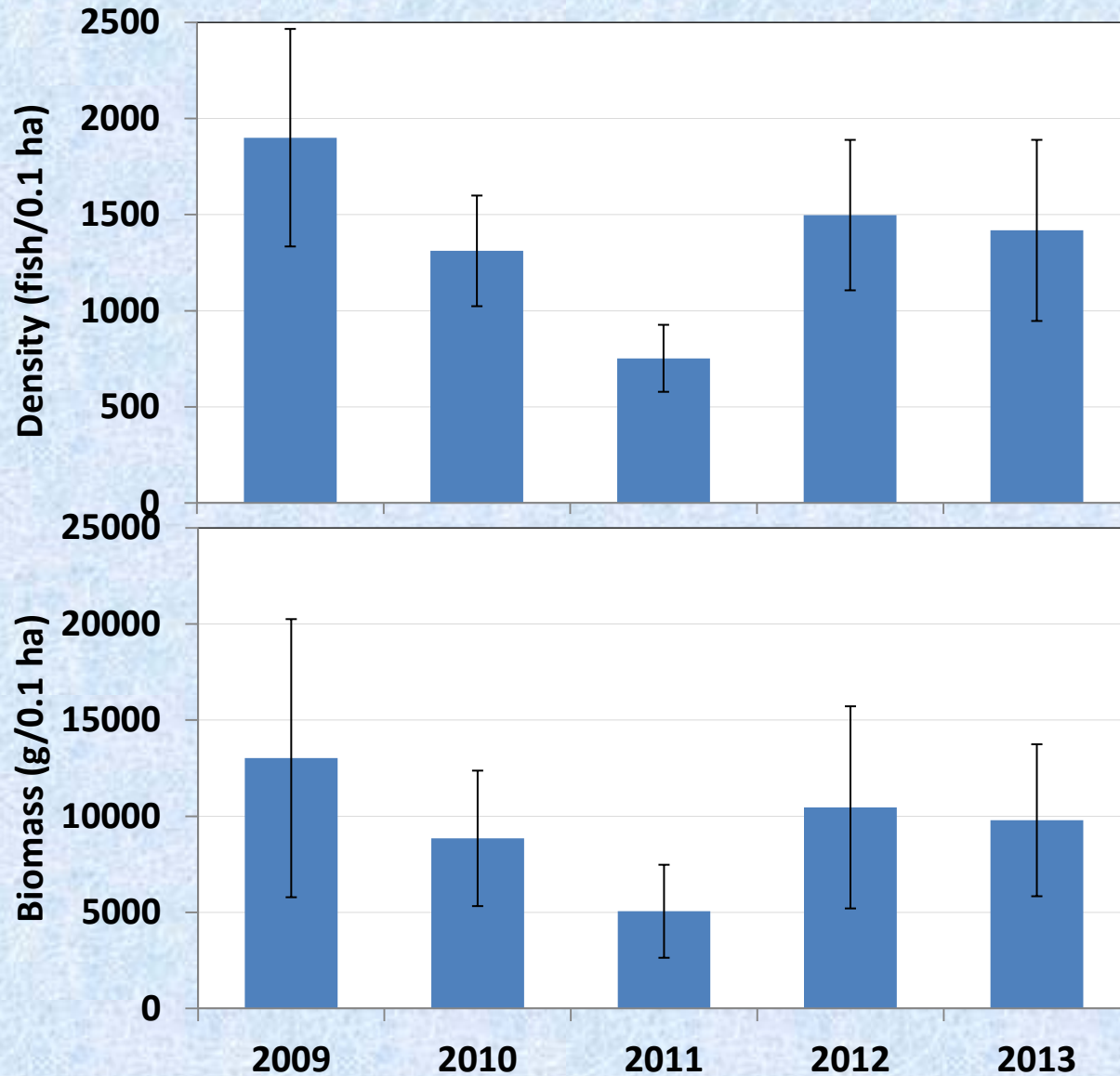
- Reduced community metrics
- Reduced density/biomass of individual species
- Disproportionate effect on YOY trout (loss of 2011 year class)



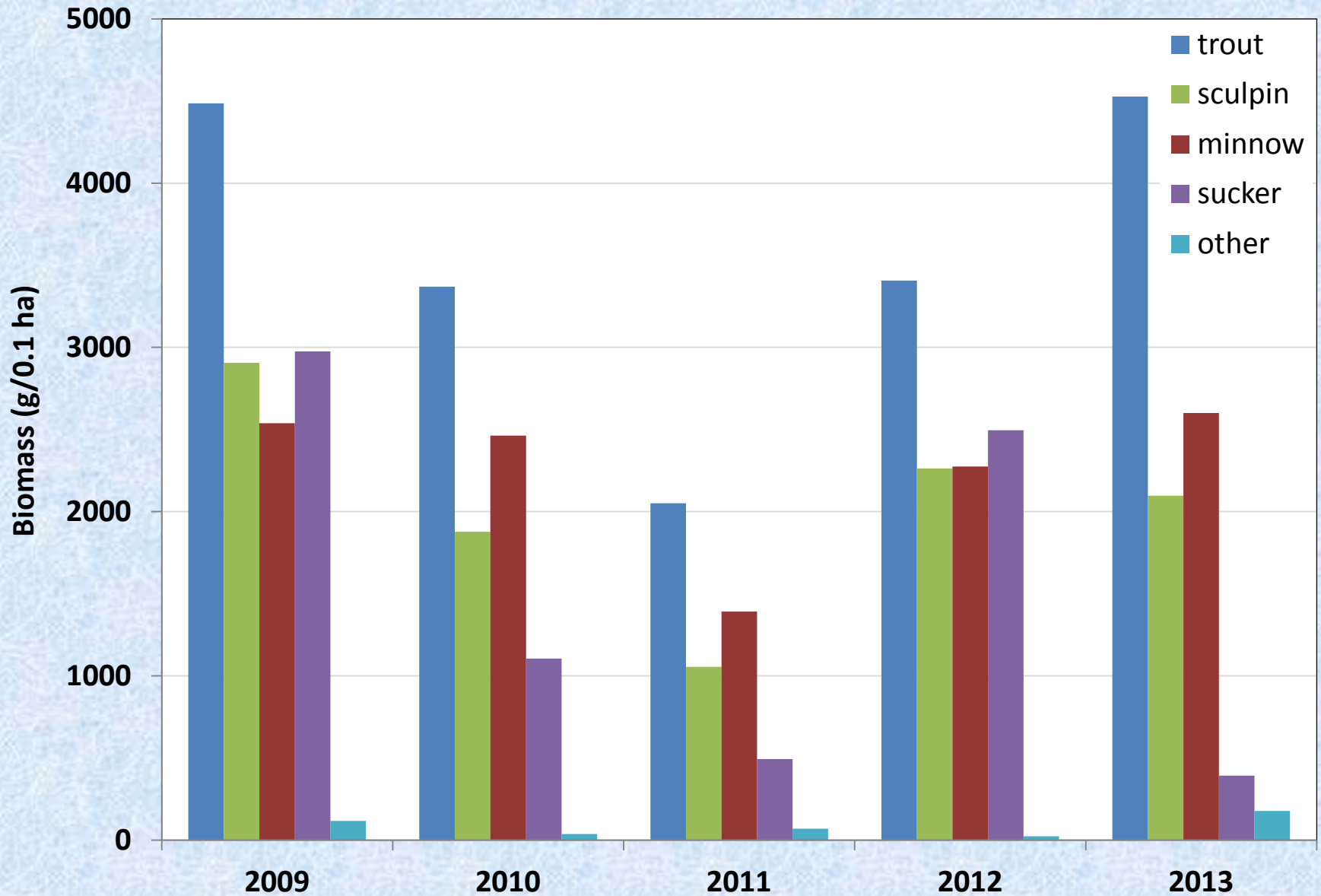
Mean Community Richness and Diversity



Mean Community Density and Biomass (All 9 sites)

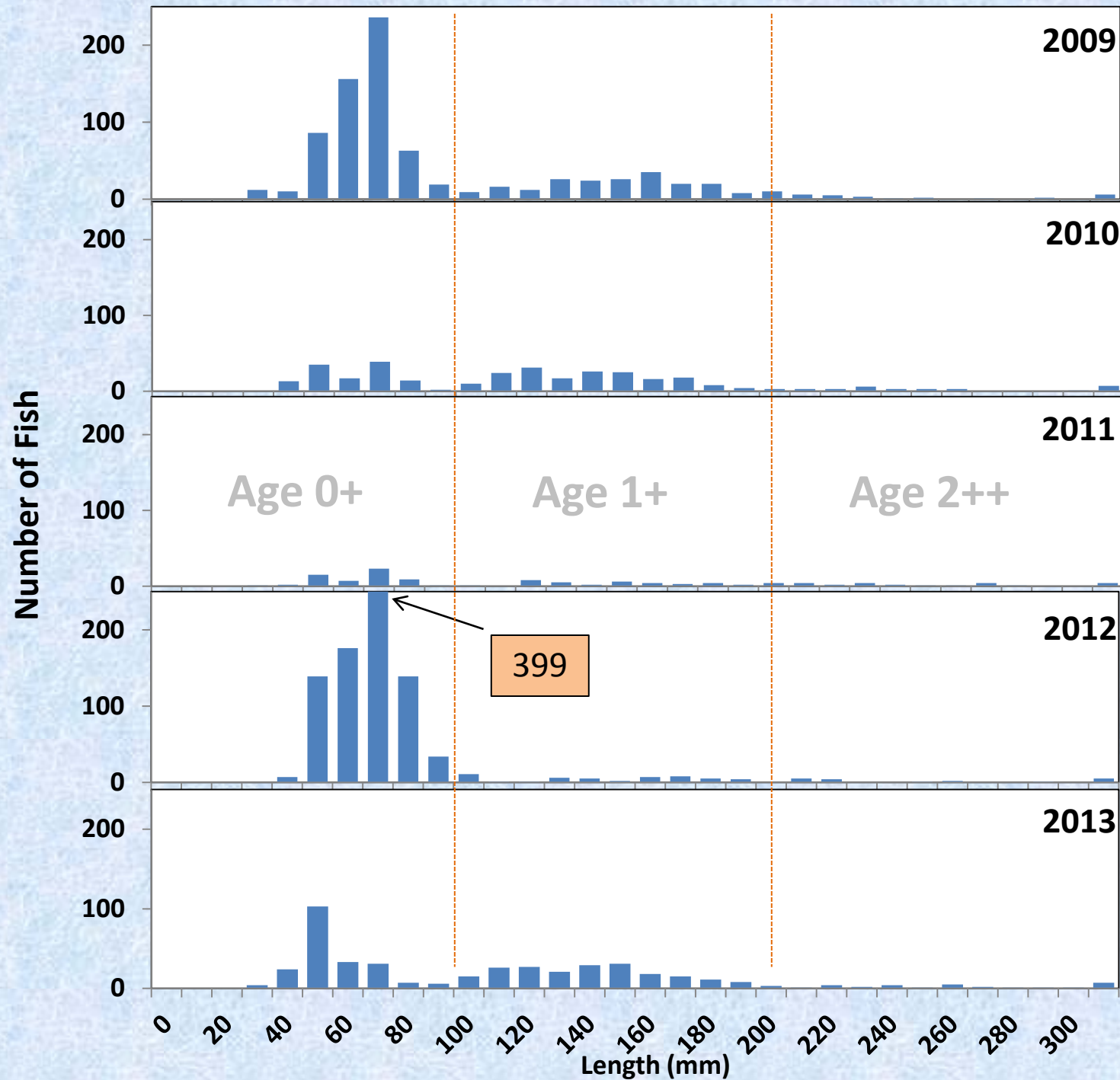


Mean Species/group Biomass by Year



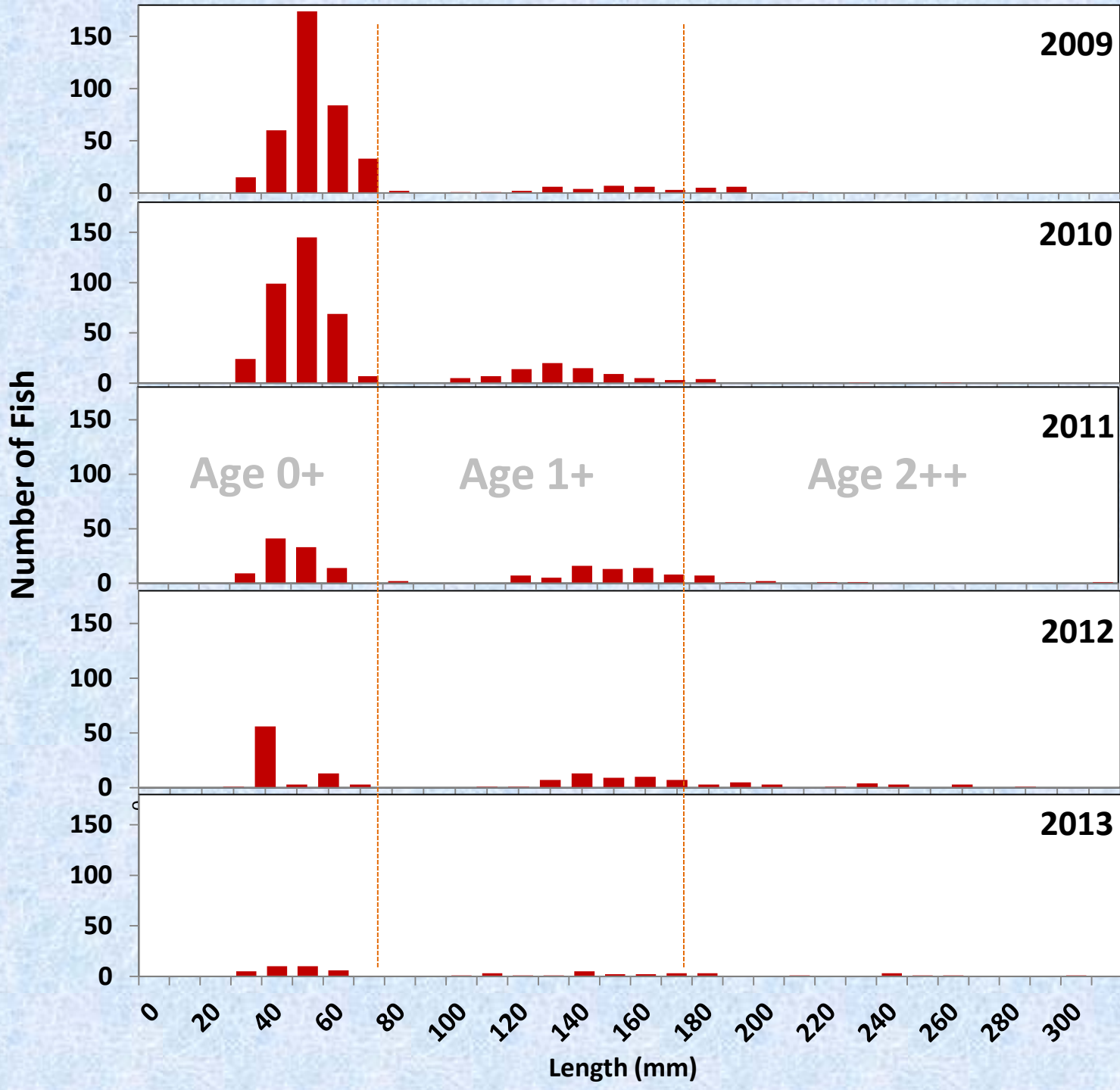
Population age structure histograms for brown trout

(Cumulative for all 9 sites for each year)



Population age structure histograms for rainbow trout

(Cumulative for all 9 sites for each year)

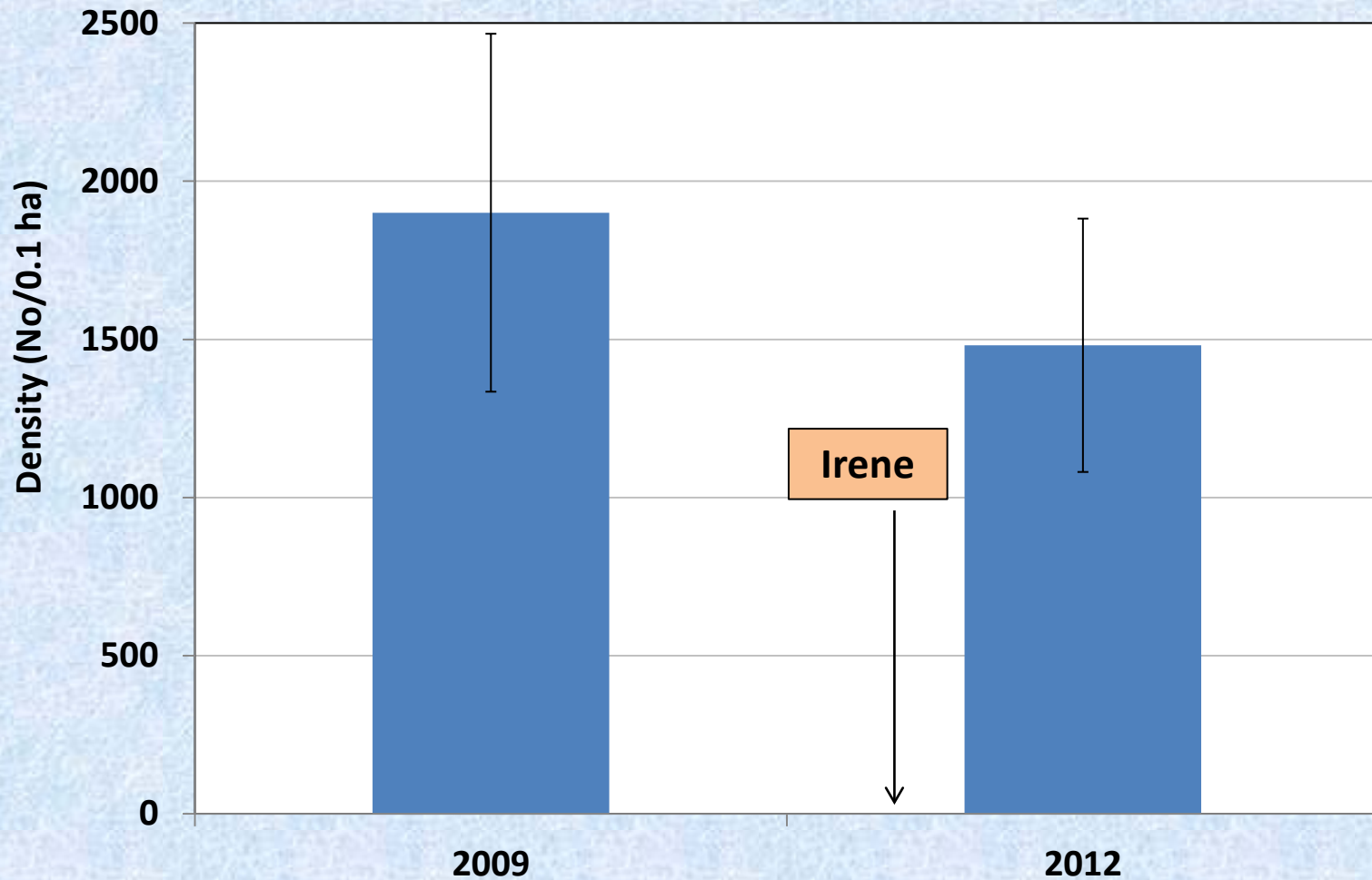


Conclusions:

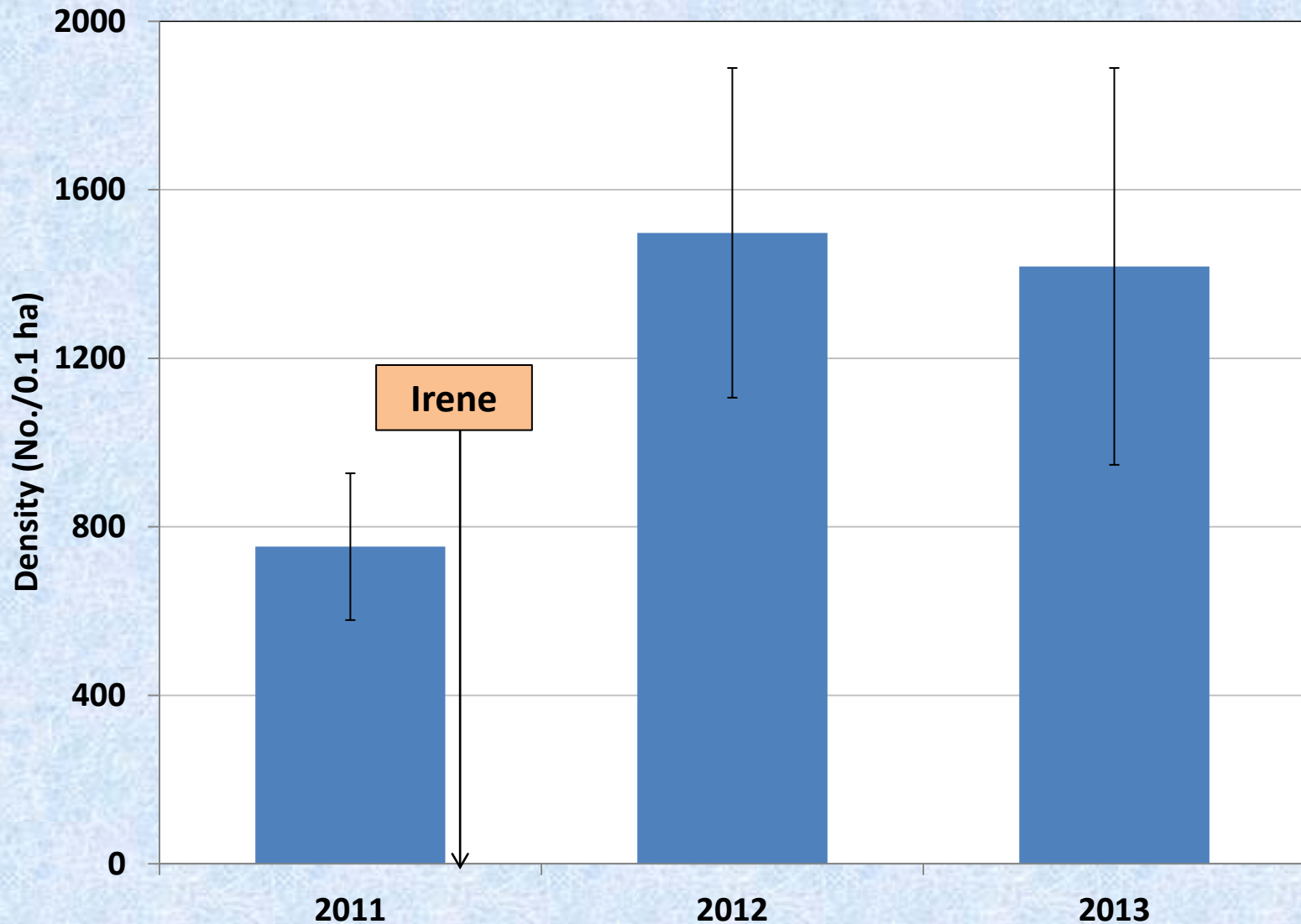
- Scope of study period is critical for interpretation



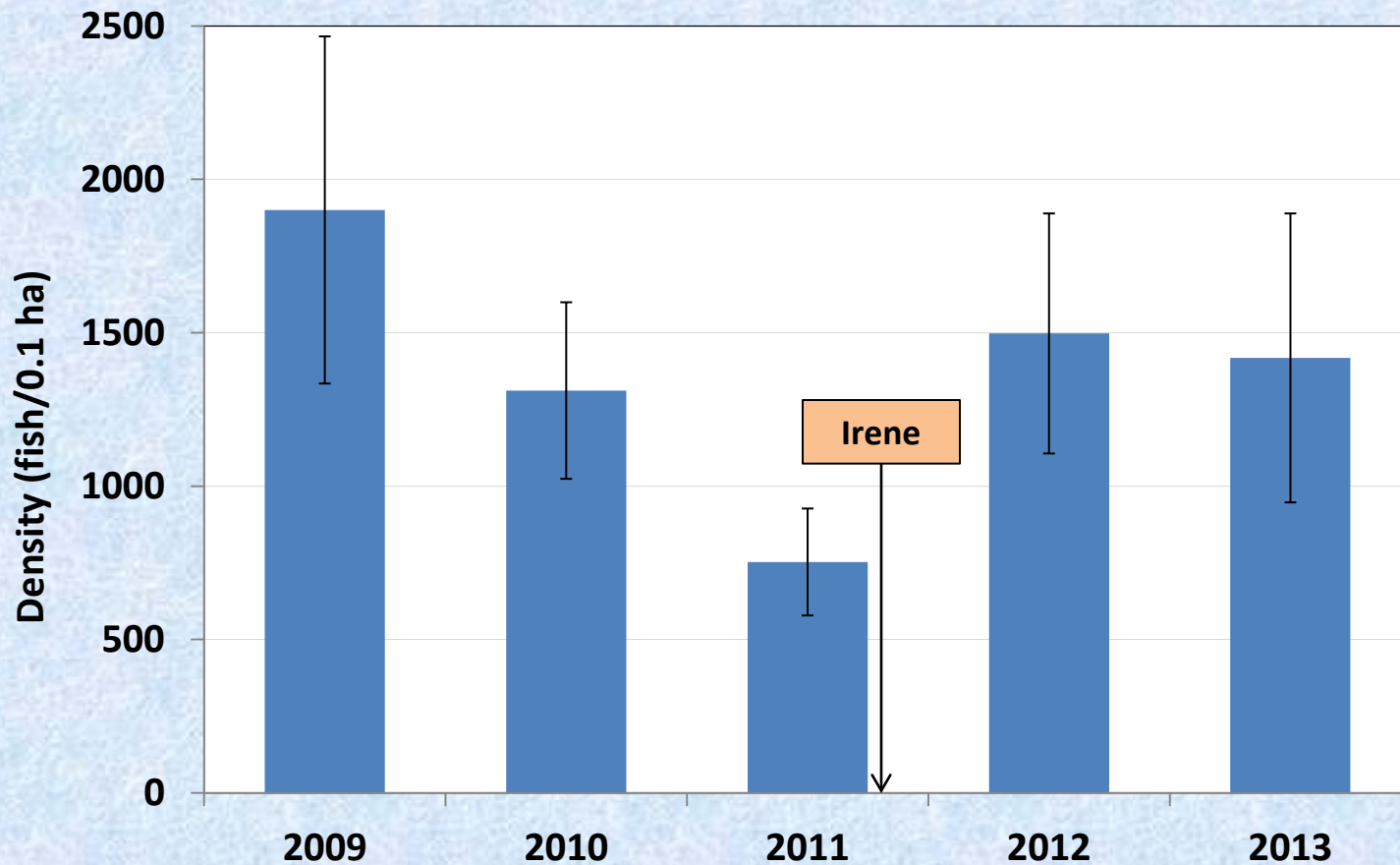
Conclusion: Floods are Bad?



Conclusion: Floods are Good?



Conclusion: The post-flood years (2012-13) fell well within the range of natural variability

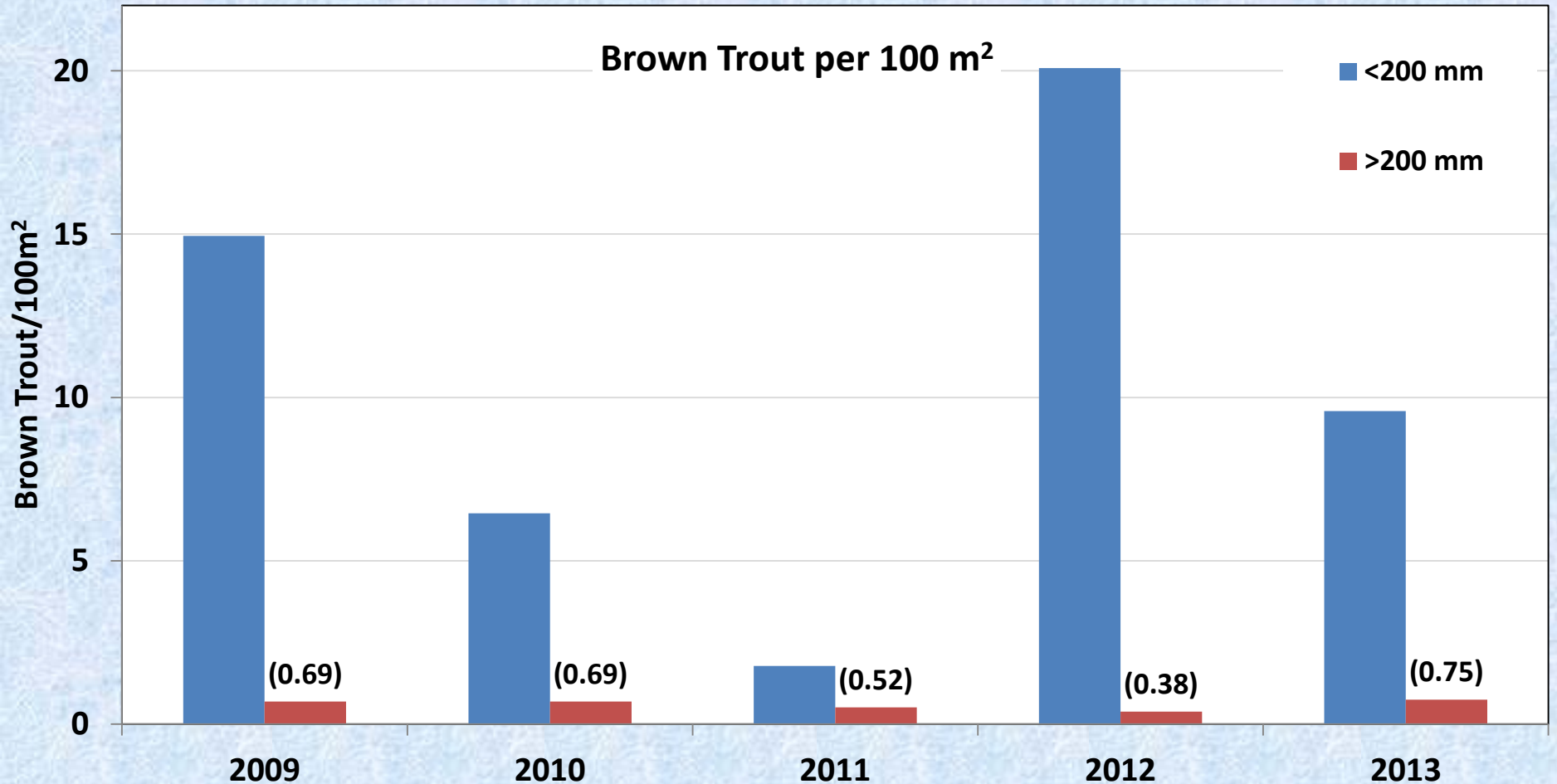


Conclusions

- **Scope of sampling period is critical for interpretation**
- **Flood had no meaningful impact on fish community**
- **Divergent effects on brown and rainbow trout populations**
- **Timing of flood and life history is key to population impacts**
- **Factors prior to Irene depressed community in 2011**



Implication for Anglers



Questions?

Scott George

sgeorge@usgs.gov

Barry Baldigo

bbaldigo@usgs.gov

George Robinson

grobenson@albany.edu



Continuous Discharge at Esop3a

